

## **REMARKS/AMENDMENTS**

### **I. Introduction**

This paper addresses the issues raised in the Office Action made Final mailed 23 October 2006. This amendment is submitted in compliance with the guidelines of the revised amendment practice. See 1267 Off. Gazette 106.

Claims 1-3, 5-8, 11 and 12 are currently pending. In the Office Action of 23 October 2006, the Examiner stated that the applicants have not fully complied with the requirements for deposit of biological material, objected to Claims 1 and 5 and rejected Claims 1-3, 5-8, 11 and 12. Specifically, Claims 1 and 5 were objected to due to informalities. Claims 5 and 7 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Claims 1-3, 5-8, 11 and 12 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The applicants respectfully traverse these grounds of rejection.

### **II. Requirements for Deposit of Biological Material**

As suggested by the Examiner, the applicants have amended the specification to include the following statement at the end of paragraph [0055], "All restrictions on the availability to the public of the material so deposited will be irrevocably removed upon the granting of a patent." No new matter has been added.

In light of the amendment to the specification, the applicants contend that they have fully complied with the requirements for deposit of biological material, and respectfully request that this rejection be withdrawn.

### **III. Claim Objections**

As suggested by the Examiner, Claim 1 and 5 have been amended to correct for informalities by changing the grammar of "antibiotic" to "antibiotics".

In light of the amendment to Claim 1 and 5, the objection set forth in the pending Office action is rendered moot, and the Claims, as amended, are in a condition for allowance. Reconsideration of this objection is respectfully requested.

#### **IV. Claim Rejection under 35 U.S.C. § 112, first paragraph**

Claims 5 and 7 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Claim 5 depends from Claim 1, while Claim 7 depends from Claim 5. The applicants respectfully traverse this rejection.

In light of the deposit receipt provided and the additional clarification of paragraph 55 as amended to the language suggested by the Examiner, Applicants believe that they have fully complied with the enablement requirement and respectfully request that rejection of Claims 5 and 7 be withdrawn.

#### **V. Claim Rejection under 35 U.S.C. § 112, second paragraph**

Claims 1-3, 5-8, 11 and 12 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The applicants respectively traverse this rejection.

The Examiner stated in the Office Action, that the above cited claims are vague and indefinite since it is not clear from the claim that the “gene encoding P5 with antibacterial, antifungal and anticancer activities” is the “antibiotic” recited in line 1 of Claim 1. The applicants would like to point out that Claim 1 has been amended to read “gene encoding P5 having antibacterial, antifungal and anticancer activities”. No new matter has been introduced by way of this amendment.

The surface expression of antibiotics indicates the surface expression of P5 peptide having antibacterial, antifungal and anticancer activities. As described in the specification, specifically in Example 2, experimental results confirmed that the antifungal activity of *Lactobacillus* was significantly increased after surface-expressing the P5 peptide having antibacterial, antifungal and anticancer activities. Therefore, the actual antibiotic(s) of the surface expression vector according to the present invention is obtained by the surface expression of P5 peptide.

The Examiner further stated that it was unclear how the recited pgsB, pgsC and pgsA allow for the “surface expression of antibiotics” and requested further clarification on whether the P5 gene is somehow linked or fused to the genes for the poly-gamma-glutamate synthetase complex, thus allowing surface expression of the P5 peptide. Claim 1 has been amended to

clarify this by adding that the gene encoding P5 peptide having antibacterial, antifungal and anticancer activities is “fused with said gene encoding a poly-gamma-glutamate synthetase complex”. No new matter has been introduced by way of this amendment.

As described in the specification, specifically in Example 1, the gene encoding P5 peptide having antibacterial, antifungal and anticancer activities is bound in a manner such that the translation codon of the P5 gene fits into the C-terminal of pgsA by treating with restriction enzymes, BamHI and HINDIII, to result in P5 gene in pHCE1LB:A-P5. The P5 gene was fitted with the surface expression vector pHCE1LB:pgsA treated with restriction enzymes, BamHI and HINDIII, such that the translation codon of the P5 gene was fitted with the C-terminal of the outer membrane gene pgsA, which is also shown in the genetic map of the vector pHCE1LB:pgsA-P5 (Fig.1). Furthermore, in Example 1, *Lactobacillus casei* transformed with the surface expression vector pHCE1LB:pgsA-P5 was cultured and the expression of the peptide antibiotics P5 fused with the C-terminal of the gene pgsA was analyzed. As a result, the protein expression pattern of peptide antibiotic P5 fused with pgsA gene was identified (Fig. 2B). Therefore, it could be confirmed through Example 1 and Fig. 2B that P5 is fused with gene encoding polygamma-glutamate synthetase complexes to express and is expressed together on the surface microorganism.

In light of the amendment to Claim 1, the rejections set forth in the pending Office Action are rendered moot, and the Claims, as amended, are in a condition for allowance. Reconsideration of these rejections is respectfully requested.

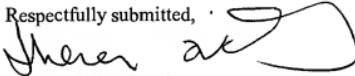
## **VI. Conclusion**

In light of the forgoing remarks and amendments, the rejections set forth in the pending Office Action are rendered moot, and the Claims, as amended, are in a condition for allowance. Reconsideration of these rejections is respectfully requested.

Applicant reserves the right to file one or more continuation applications based on the above referenced application.

It is believed that no additional fees are required with the filing of this paper. In the event, however, fees are due with this paper, please contact the undersigned.

Respectfully submitted,



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